REMARKS

Claims 1-53 and 56-73 are pending in the Application. Claims 1, 22, 36, 45, 56, 65 have been amended. Independent claim 1 has been amended to recite the claimed feature that each unit cell includes an electrode. Moreover, claim 1 has also been amended to recite that the current circuitry for receiving an input current provides electrical current to the electrodes of the unit cells. Claim 22 has been amended to include a comma after "conductive solution" to even more clearly recite the claimed feature that current is provided between various unit cells and the return electrode when in the presence of the conductive solution.

Independent claim 36 has been amended to recite the claimed feature that each unit cell includes an electrode, the electrode being driven or un-driven. Claim 36 has also been amended to recite the feature that a first column selector external to the array and operatively connected to the array provides an indication of first output values to the electrodes of the unit cells operatively connected to selected columns of the array. Similarly, claim 36 has further been amended to recite the feature that a second column selector external to the array and operatively connected to the array provides an indication of second output values to the electrodes of the unit cells operatively connected to selected columns of the array. Finally, claim 36 has been amended to recite that each electrode within the array is driven at one of the first output values, the second output values, or is un-driven.

Similar amendments have been made to independent claims 45 and 56. Independent claim 65 has been amended to recite the claimed feature that the array of unit

cells are arranged in rows and columns, each unit cell including an electrode, the array of unit cells disposed on a chip adapted to receive a conductive solution including charged biological materials. Claim 65 has also been amended to recite the feature that at least one first column selector external to the array and operatively connected to the array provides an indication of first output values to the electrodes of the unit cells. Similarly, claim 65 has been amended to recite the feature the at least one second column selector external to the array and operatively connected to the array provides an indication of second output values to the electrodes of the unit cells. Finally, claim 65 has been amended to recite that each electrode within a single column is driven at a value corresponding the output values of the at least one first column selector, the at least one second column selector, or is un-driven.

In the July 9, 2003 Office Action, a new title of the invention was requested. In response, Applicants have submitted a replacement title which even more clearly indicative of the subject matter to which the claims are directed.

Claims 22-35 stand rejected under 35 U.S.C. § 112, second paragraph. Specifically, the claims were rejected because the phrase "the conductive solution current" lacked antecedent basis. Applicants have amended claim 22 to recite "the conductive solution, [comma] current." The term "conductive solution" has antecedent basis. Claims 22-35 are now in full compliance with § 112, second paragraph.

Claims 1-11, 15-19, 36-53, and 56-73 are rejected under 35 U.S.C. § 102(b) and 102(e)(2) as being anticipated by U.S. Patent No. 5,696,577 (Stettner et al.) or U.S. Patent

No. 4,448,534 (Wertz et al.). Applicants submit that the claims, as amended, are not anticipated by either Stettner et al. or Wertz et al.

Stettner et al.

Stettner et al. discloses a three dimensional underwater laser radar. The device launches a short blue-green laser pulse into the water from an airborne or underwater platform, and stores the return signal from a single pulse in multiple time slices on a two dimensional detector array. Col. 8, lines 14-18. Each time slice represents information from a particular depth in the water and this information is stored as an analog signal, on separate storage capacitors at each detector. Col. 8, lines 20-23. By means of high-speed switching between the storage capacitors, the third dimension is recorded by the device with the single pulse from the light source. The three dimensional image data is read off the array and digitized during the relatively large time between laser pulses.

Applicants submit that Stettner et al. fails to disclose or otherwise suggest the claimed feature of an array of unit cells disposed on a chip adapted to receive a conductive solution including charged biological materials. While the Stettner et al. device is used to take radar images under water, the array itself is not adapted to receive a conductive solution. As stated in Stettner et al., the readout analog-processing chip 7 (which contains the unit cells) is located inside a vacuum enclosure or tube 80 with an entrance window 8 made of fiber optic material with the vacuum side 82 being a photocathode. Col. 5, lines 45-48; see also Fig. 2. The analog-processing chip 7 does not come into contact with a conductive solution containing charged biological materials. If a conductive solution did

come into contact with the analog-processing chip 7 it would likely destroy the circuitry contained therein.

In addition, Stettner et al. fails to disclose or otherwise suggest the claimed feature found in independent claim 1 that each unit cell include an electrode as well as circuitry for receiving an input current and providing electrical current to the electrodes of the unit cells. Rather, Stettner et al. discloses a metal anode (18) or PIN diode (41) that is used to collect an amplified electrical signal which is then connected to an on-chip storage capacitor (25). Col. 9, lines 27-48. To the extent that the metal anode (18) of Stettner et al. could be considered an electrode, Stettner et al. still fails to disclose or suggest the feature of circuitry for receiving an input current and providing electrical current to the electrode. The anodes of Stettner et al. are passive whereas the electrodes of the claimed system are active (i.e., supplied with an electrical current).

Similarly, with respect to independent claims 36, 45, 56, and 65, Stettner et al. fails to disclose the claimed feature that first and second column selectors external to and operatively connected to the array provide an indication of output values (first and second, respectively) to the electrodes of the unit cells. In this manner, each electrode of the unit cells within that column which are associated with one or more selected rows will be activated at the first or second output value level or be un-driven. See Specification, page 32, line 26 – page 33, line 7. In Stettner et al., column and shift registers are used merely to access the unit cell electronics. The column and shift registers of Stettner et al. do not provide an indication of output values to the unit cells. Instead, the shift registers are used to address and read-out data from the unit cells.

Wertz et al.

Wertz et al. discloses a device for electronically scanning each well of a multi-well tray containing liquid samples. The device uses a matrix of photocells (32) to measure the turbidity of the sample being sensed. The device uses a multiplexer (39) to electronically scan each photocell within the matrix. There are several differences, however, between the device of Wertz et al. and the claimed system in the present Application. First, Wertz et al. fails to disclose or otherwise suggest the claimed feature of unit cells disposed on a chip adapted to receive a conductive solution including charged biological materials. To the extent that the matrix of photocells (32) could be construed as an array of unit cells, the photocells (32) themselves are not adapted to receive a conductive solution including charged biological materials. To the contrary, the device of Wertz et al. uses a separate sample tray (14) that is disposed above and away from the matrix of photocells (32). The device of Wertz et al. even uses a tray holder (29) that is disposed between the sample tray (14) and the photocells (32).

Nor does Wertz et al. disclose or otherwise suggest the claimed feature of, for example, claim 1 wherein each unit cell includes an electrode as well as circuitry for receiving an input current and providing electrical current to the electrodes of the unit cells. Wertz et al. discloses a matrix of photocells that are electronically addressed to read out a turbidity value signal. The device of Wertz et al. does not employ electrodes, nor does it disclose current circuitry for receiving an input current and providing electrical current to any electrode.

Wertz et al. also fails to disclose or suggest the claimed feature (found in claims 36, 45, 56, and 65) of using first and second column selectors that are external to and operatively coupled to the array for providing an indication of output values (first and second, respectively) to the electrodes of the unit cells. Wertz et al. uses driver circuits (103) and FET switches (111) in conjunction with a microcomputer (41) to select individual photocells of the matrix. Wertz et al. also does not disclose the claimed feature that an electrode is driven at either the first or second output value or is un-driven. In fact, in the device of Wertz et al. there are no electrodes present that could be driven.

Applicants submit that the claims are allowable over the prior art of record. A notice of allowability is respectfully requested. Should Examiner have any questions concerning this Amendment and Response, please contact the undersigned attorney at (949) 737-2926.

Respectfully submitted,

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